

WHAT IS CLAIMED IS:

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1. A method for determining buffer status, said method comprising:
 - keying a buffer status to a transport gap other than a standard SONET transport gap.
 2. The method of Claim 1, wherein said keying a buffer status to a transport gap other than a standard SONET transport gap further comprises:
 - keying a transmit buffer status to a transport gap other than the standard SONET transport gap.
 3. The method of Claim 2, wherein said keying a transmit buffer status to a transport gap other than the standard SONET transport gap further comprises:
 - the transmit buffer interposed between a pointer interpreter which receives data from a switching matrix and a pointer generator which prepares a standard SONET STS-N frame.
 4. The method of Claim 2, wherein said keying a transmit buffer status to a transport gap other than the standard SONET transport gap further comprises:
 - keying the transmit buffer to at least a column length of a non-standard SONET transport gap.
 5. The method of Claim 4, wherein each column of the non-standard SONET transport gap contains 1 byte per each STS channel in use.
 6. The method of Claim 4, wherein said keying the transmit buffer to at least a column length of a non-standard SONET transport gap further comprises:
 - keying a pointer generator constructed to read data from the transmit buffer to at least a column length of a non-standard SONET transport gap.
 7. The method of Claim 6, wherein said keying a pointer generator constructed to read data from the transmit buffer to at

3 least a column length of a non-standard SONET transport gap further
4 comprises:

5 accepting input specifying a substantially 28-column almost-
6 empty range for the pointer generator reading data
7 constructed to read data from the transmit buffer.

1 8. The method of Claim 4, wherein said keying the transmit
2 buffer to at least a column length of a non-standard SONET transport
3 gap further comprises:

4 keying a pointer interpreter constructed to write data to the
5 transmit buffer to at least a column length of a non-
6 standard SONET transport gap.

1 9. The method of Claim 8, wherein said keying a pointer
2 generator constructed to write data to the transmit buffer to at
3 least a column length of a non-standard SONET transport gap further
4 comprises:

5 accepting input specifying a substantially 5-column almost-full
6 range for the pointer interpreter constructed to write
7 data to the transmit buffer.

1 10. The method of Claim 1, wherein said keying a buffer
2 status to a transport gap other than a standard SONET transport gap
3 further comprises:

4 keying a receive buffer status to a transport gap other than
5 the standard SONET transport gap.

1 11. The method of Claim 10, wherein said keying a receive
2 buffer status to a transport gap other than the standard SONET
3 transport gap further comprises:

4 the receive buffer interposed between a pointer generator which
5 feeds data to a switching matrix and a pointer
6 interpreter which receives data.

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1 12. The method of Claim 10, wherein said keying a receive
2 buffer status to a transport gap other than the standard SONET
3 transport gap further comprises:
4 keying the receive buffer to at least a column length of a non-
5 standard SONET transport gap.

1 13. The method of Claim 12, wherein each column of the non-
2 standard SONET transport gap contains 1 byte per each STS channel in
3 use.

1 14. The method of Claim 12, wherein said keying the receive
2 buffer to at least a column length of a non-standard SONET transport
3 gap further comprises:
4 keying a pointer generator constructed to read data from the
5 receive buffer to at least a column length of a non-
6 standard SONET transport gap.

1 15. The method of Claim 14, wherein said keying a pointer
2 generator constructed to read data from the receive buffer to at
3 least a column length of a non-standard SONET transport gap further
4 comprises:
5 accepting input specifying a substantially 5-column almost-
6 empty range for the pointer generator constructed to read
7 data from the transmit buffer.

1 16. The method of Claim 12, wherein said keying the receive
2 buffer to at least a column length of a non-standard SONET transport
3 gap further comprises:
4 keying a pointer interpreter constructed to write data to the
5 receive buffer to at least a column length of a non-
6 standard SONET transport gap.

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17. The method of Claim 16, wherein said keying the receive
buffer to at least a column length of a non-standard SONET transport
gap further comprises:
accepting input specifying a substantially 28-column almost-
full range for the pointer interpreter constructed to
write data to the receive buffer.

18. A system for determining buffer status, said system comprising:
means for keying a buffer status to a transport gap other than a standard SONET transport gap.

19. The system of Claim 18, wherein said means for keying a buffer status to a transport gap other than a standard SONET transport gap further comprises:
means for keying a transmit buffer status to a transport gap other than the standard SONET transport gap.

20. The system of Claim 19, wherein said means for keying a transmit buffer status to a transport gap other than the standard SONET transport gap further comprises:
the transmit buffer interposed between a pointer interpreter which receives data from a switching matrix and a pointer generator which prepares a standard SONET STS-N frame.

21. The system of Claim 19, wherein said means for keying a transmit buffer status to a transport gap other than the standard SONET transport gap further comprises:
means for keying the transmit buffer to at least a column length of a non-standard SONET transport gap.

22. The system of Claim 21, wherein each column of the non-standard SONET transport gap contains 1 byte per each STS channel in use.

23. The system of Claim 21, wherein said means for keying the transmit buffer to at least a column length of a non-standard SONET transport gap further comprises:
means for keying a pointer generator constructed to read data from the transmit buffer to at least a column length of a non-standard SONET transport gap.

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1 24. The system of Claim 21, wherein said means for keying the
2 transmit buffer to at least a column length of a non-standard SONET
3 transport gap further comprises:

4 means for keying a pointer interpreter constructed to write
5 data to the transmit buffer to at least a column length
6 of a non-standard SONET transport gap.

1 25. The system of Claim 18, wherein said means for keying a
2 buffer status to a transport gap other than a standard SONET
3 transport gap further comprises:

4 means for keying a receive buffer status to a transport gap
5 other than the standard SONET transport gap.

1 26. The system of Claim 25, wherein said means for keying a
2 receive buffer status to a transport gap other than the standard
3 SONET transport gap further comprises:

4 the receive buffer interposed between a pointer generator which
5 feeds data to a switching matrix and a pointer
6 interpreter which receives data.

1 27. The system of Claim 25, wherein said means for keying a
2 receive buffer status to a transport gap other than the standard
3 SONET transport gap further comprises:

4 means for keying the receive buffer to at least a column length
5 of a non-standard SONET transport gap.

1 28. The system of Claim 27, wherein each column of the non-
2 standard SONET transport gap contains 1 byte per each STS channel in
3 use.

1 29. The system of Claim 27, wherein said means for keying the
2 receive buffer to at least a column length of a non-standard SONET
3 transport gap further comprises:

4 means for keying a pointer generator constructed to read data
5 from the receive buffer to at least a column length of a
6 non-standard SONET transport gap.

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30. The system of Claim 27, wherein said means for keying the
receive buffer to at least a column length of a non-standard SONET
transport gap further comprises:
means for keying a pointer interpreter constructed to write
data to the receive buffer to at least a column length of
a non-standard SONET transport gap.

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1 31. A SONET node comprising:
2 at least one pointer interpreter having an almost full buffer
3 detector set substantially equal to a number of columns
4 present in a non-standard SONET transport gap.

1 32. The SONET node of Claim 31, wherein the number of columns
2 present in a non-standard SONET transport gap comprises 27 columns of
3 data.

1 33. The SONET node of Claim 32, wherein each of the columns
2 comprises at least one byte of data for each STS channel in use.

1 34. The SONET node of Claim 31, wherein the SONET node
2 further comprises one or more components selected from the group
3 comprising a processor, a memory device, a bus, and a communications
4 device.

1 *Sub B6* 35. A SONET node comprising:
2 at least one pointer generator having an almost empty buffer
3 detector set substantially equal to a number of columns
4 present in a non-standard SONET transport gap.

1 36. The SONET node of Claim 35, wherein the number of columns
2 present in a non-standard SONET transport gap comprises 27 columns of
3 data.

1 37. The SONET node of Claim 36, wherein each of the columns
2 comprises at least one byte of data for each STS channel in use.

1 38. The SONET node of Claim 35, wherein the SONET node
2 further comprises one or more components selected from the group
3 comprising a processor, a memory device, a bus, and a communications
4 device.

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1 39. A method for maintaining communications when using
2 asymmetrical gapping structures, said method comprising:
3 detecting a transition involving at least one SONET frame;
4 in response to said detecting yielding a determination that a
5 receive FIFO buffer is almost full during the transition
6 involving at least one SONET frame, engaging in negative
7 stuffing; and
8 in response to said detecting yielding a determination that a
9 receive FIFO buffer is almost empty during the transition
10 involving at least one SONET frame, engaging in positive
11 stuffing.

1 40. The method of Claim 39, wherein the determination that a
2 receive buffer is almost full comprises detecting that the receive
3 buffer has less empty space than that required to buffer data during
4 construction of a non-standard transport gap.

1 41. The method of Claim 40, wherein said detecting that the
2 receive buffer has less empty space than that required to buffer data
3 during construction of a non-standard transport gap further comprises
4 detecting that the receive buffer has space less than or equal to
5 twenty-eight columns of data when the non-standard transport gap is
6 twenty-seven columns of data in size.

1 42. The method of Claim 39, wherein the determination that a
2 receive buffer is almost empty comprises detecting that the receive
3 buffer has less empty space than that required to buffer data during
4 interpretation of a standard transport gap.

1 43. The method of Claim 42, wherein said detecting that the
2 receive buffer has less empty space than that required to buffer data
3 during interpretation of a standard transport gap further comprises
4 detecting that the receive buffer has space less than or equal to
5 five columns of data when the standard transport gap is three columns
6 of data in size.

1 *Be* 44. A system for maintaining communications when using
2 asymmetrical gapping structures, said method comprising:
3 means for detecting a transition involving at least one SONET
4 frame;
5 means, responsive to said means for detecting yielding a
6 determination that a receive FIFO buffer is almost full
7 during the transition involving at least one SONET frame,
8 for engaging in negative stuffing; and
9 means, responsive to said means for detecting yielding a
10 determination that a receive FIFO buffer is almost empty
11 during the transition involving at least one SONET frame,
12 for engaging in positive stuffing.

1 45. The system of Claim 44, wherein said means, responsive to
2 said means for detecting yielding a determination that a receive FIFO
3 buffer is almost full during the transition involving at least one
4 SONET frame, for engaging in negative stuffing further comprises:
5 means for detecting that the receive buffer has less empty
6 space than that required to buffer data during
7 construction of a non-standard transport gap.

1 46. The system of Claim 45, wherein said means for detecting
2 that the receive buffer has less empty space than that required to
3 buffer data during construction of a non-standard transport gap
4 further comprises:
5 means for detecting that the receive buffer has space less than
6 or equal to twenty-eight columns of data when the non-
7 standard transport gap is twenty-seven columns of data in
8 size.

1 47. The system of Claim 44, wherein said means, responsive to
2 said means for detecting yielding a determination that a receive FIFO
3 buffer is almost empty during the transition involving at least one
4 SONET frame, for engaging in positive stuffing further comprises:
5 means for detecting that the receive buffer has less empty
6 space than that required to buffer data during
7 interpretation of a standard transport gap.

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1 48. The system of Claim 47, wherein said means for detecting
2 that the receive buffer has less empty space than that required to
3 buffer data during interpretation of a standard transport gap further
4 comprises:
5 means for detecting that the receive buffer has space less than
6 or equal to five columns of data when the standard
7 transport gap is three columns of data in size.

1 49. A method for maintaining communications when using
2 asymmetrical gapping structures, said method comprising:
3 detecting a transition involving at least one SONET frame;
4 in response to said detecting yielding a determination that a
5 transmit FIFO buffer is almost full during the transition
6 involving at least one SONET frame, engaging in negative
7 stuffing; and
8 in response to said detecting yielding a determination that a
9 transmit FIFO buffer is almost empty during the
10 transition involving at least one SONET frame, engaging
11 in positive stuffing.

1 50. The method of Claim 49, wherein the determination that
2 the transmit buffer is almost full comprises detecting that the
3 transmit buffer has less empty space than that required to buffer
4 data during construction of a standard transport gap.

1 51. The method of Claim 50, wherein said detecting that the
2 transmit buffer has less empty space than that required to buffer
3 data during construction of a standard transport gap further
4 comprises detecting that the transmit buffer has space less than or
5 equal to five columns of data when the standard transport gap is
6 three columns of data in size.

1 52. The method of Claim 49, wherein the determination that
2 the transmit buffer is almost empty comprises detecting that the
3 transmit buffer has less empty space than that required to buffer
4 data during interpretation of a non-standard transport gap.

1 53. The method of Claim 52, wherein said detecting that the
2 transmit buffer has less empty space than that required to buffer
3 data during interpretation of a non-standard transport gap further
4 comprises detecting that the transmit buffer has space less than or
5 equal to twenty-eight columns of data when the non-standard transport
6 gap is twenty-seven columns of data in size.

1 *Sub* 54. A system for maintaining communications when using
2 asymmetrical gapping structures, said system comprising:
3 means for detecting a transition involving at least one SONET
4 frame;
5 means, responsive to said means for detecting yielding a
6 determination that a transmit FIFO buffer is almost full
7 during the transition involving at least one SONET frame,
8 for engaging in negative stuffing; and
9 means, responsive to said means for detecting yielding a
10 determination that a transmit FIFO buffer is almost empty
11 during the transition involving at least one SONET frame,
12 for engaging in positive stuffing.

1 55. The system of Claim 54, wherein said means, responsive to
2 said means for detecting yielding a determination that a transmit
3 FIFO buffer is almost full during the transition involving at least
4 one SONET frame, for engaging in negative stuffing further comprises:
5 means for detecting that the transmit buffer has less empty
6 space than that required to buffer data during
7 construction of a standard transport gap.

1 56. The system of Claim 55, wherein said means for detecting
2 that the transmit buffer has less empty space than that required to
3 buffer data during construction of a standard transport gap further
4 comprises:
5 means for detecting that the transmit buffer has space less
6 than or equal to five columns of data when the standard
7 transport gap is three columns of data in size.

1 57. The system of Claim 54, wherein said means, responsive to
2 said means for detecting yielding a determination that a transmit
3 FIFO buffer is almost empty during the transition involving at least
4 one SONET frame, for engaging in positive stuffing further comprises:
5 means for detecting that the transmit buffer has less empty
6 space than that required to buffer data during
7 interpretation of a non-standard transport gap.

1 ~~58. The system of Claim 57, wherein said means for detecting~~
2 ~~that the transmit buffer has less empty space than that required to~~
3 ~~buffer data during interpretation of a non-standard transport gap~~
4 ~~further comprises:~~
5 ~~means for detecting that the transmit buffer has space less~~
6 ~~than or equal to twenty-eight columns of data when the~~
7 ~~non-standard transport gap is twenty-seven columns of~~
8 ~~data in size.~~